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ABSTRACT

This paper describes the content and implementation of a course designed to teach science and technology majors about science fiction. Although many students had expressed little interest in the imaginative world of literature, the scientific content of the texts used attracted their attention and legitimized their involvement in something outside the realm of "hard facts." Some of the books used in the course included H.G. Wells's "The Time Machine," Isaac Asimov's "I, Robot," C.S. Lewis's "Perelandra," and Ray Bradbury's "Martian Chronicles." (KS)

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TEACHING SCIENCE FICTION TO SCIENCE AND TECHNOLOGY MAJORS

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However, among them are many avid readers of science fiction. So these hard-headed young folk do allow themselves to feast on a literature that often is imaginative to an extreme. Of course, it is the science content of this literature that attracts their interest and sanctions their indulgence in imagination. Now that they have enrolled in my science fiction course, I can help them discover why some science fiction is worth their time and some not. Also, I can help them realize that other kinds of literature may hold for them much of the same interest, delight and even excitement of science fiction. Thus, they may discover that the

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attraction of literature of all kinds is not generated solely by its overt subject matter. They may find that the ultimate attraction of literature lies in its power to help us explore and understand human nature and experience.

I

I opened the course with The Time Machine of H. G. Wells. From Isaac Asimov's introduction to the Fawcett edition, the students learned that Wells wrote this book some ten years before Einstein virtually created the new scientific world of the twentieth century with his brilliant 1905 publications. Wells' imaginative conception of a machine that enables human beings to travel forward in time is especially notable, because not until the publication of Einstein's thesis was there any scientific basis for the possibility of time-travel. No one had yet conceived of a time-machine in fiction or non-fiction. Indeed, Wells went beyond the possibility of forward travel in time, which was theoretically possible after Einstein; for Wells' machine takes a passenger backwards in time also.

My students soon realized that Wells had far more to offer than a fascinating machine. They found that his overriding purpose in Time Machine is that of many later science fiction novels. These novels, which are so frequently indebted to Wells, often ask the question, What will human society be like if present trends continue and are developed for x number of years? With his frightening picture of the world of 800,000 A.D., Wells reveals that "present trends" will continue until humans have developed into two mutually antagonistic races of creatures, the leisure class driving the others underground but the oppressed returning to literally devour their oppressors.

My students discovered that Wells had written a social parable that warns against human dissociation and the atrophy of human responsibility. I pointed out that Wells shared this kind of social vision with writers like

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Benjamin Disraeli, with his "two-nations" theme of rich vs poor,[1] and like Upton Sinclair with his The Jungle. The students were beginning to see that science fiction content in the hands of a powerful writer can become a device that makes a message compelling to contemporary readers.

Soon after reading The Time Machine, they had an opportunity to observe Isaac Asimov's treatment of disaffection and callousness in his novel I, Robot. They learned of Asimov's Columbia Ph.D. in Chemistry and of his career in biochemistry. But would this scientist, as a writer, have the skill to create the "scientific cloak" of plausibility that he describes in his introduction to The Time Machine? The science fiction writer, says Asimov, must fashion a scientific context that may be fantastic but must not go "against the findings of science"[2] and thus unfix the reader's belief. I questioned the student readers, some of whom were biology and electrical engineering majors, asking them to find flaws in the physical construction and behavior of Asimov's robot Robbie, the hero of Chapter One. They found that Asimov's skill did not falter as he made Robbie seem scientifically real and yet fully human in his psychological responses and behavior. Robbie's eyes are "glowing red" with excitement as the "thin, metal film" of his eyelids close obediently at the command of Gloria, the young girl for whom he has been purchased as a playmate. Unfairly, she accuses him of peeking during hide-and-seek. His hurt reaction and then his forced recovery of spirits in response to her cruel threat to withhold story-telling make Robbie seem touchingly human beneath his "metal skin [which is] kept at a constant temperature of seventy by the high resistance coils within."[3]

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Robbie's purity of heart is thus contrasted with the corrupt natures of the humans with whom he associates. Asimov seems to be saying that a soul compounded of pure love and loyalty could exist only in a matrix of metal, for somehow the soul within a body of flesh and blood is inevitably pervaded by evil. However, the students were able to speculate along with C. S. Lewis about how things might be in a world of people who remain uncorrupted by evil. Lewis' novel Perelandra, in which such a world is explored, contains fewer scientific innovations than some other books in our course, although Ransom's celestial coffin reminded the students of Wells' time-travel machine. This situation is most appropriate, for in Lewis' new yet timeless world the forces of good must join battle with the invading agent of evil, who is Dr. Weston an English physicist.

I told the students that Lewis, in ranging his scientist on the side of evil, was carrying forward his attack on "scientism." We would encounter this anti-scientific trend elsewhere in sicence fiction. We would find, ironically, that this genre has become a forum for debate on the question of whether scientific progress is inherently immoral. We were reminded of Wells' warning that technological progress had been a main factor in bringing the society of 800,000 A.D. to a state of decadence.

Are there scientific flaws in Perelandra? A Civil Engineering major pointed out that Ransom's statement, "In my world all the lands are fixed,"[4] goes against the [now received] theory of "floating continents and plate techtonics here on earth."[5] Our land masses are in reality floating islands

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In The Martian Chronicles, Ray Bradbury takes up this idea of people on Earth exporting their corruption to another planet. The Martians in this novel, observed a student reader, had found a way of "blending . . . art and religion with life," a way of life that contrasted with "Earth man's materialism."[7] Bradbury's Earthmen proceed to despoil Mars and to load it with their cities and artifacts, erasing all traces of that harmonious civilization. Through Ransom in Perelandra, C. S. Lewis wrote caustically "that humanity, having now sufficiently corrupted the planet where it arose,must at all costs contrive to seed itself over a larger area; . . . the vast astronomical distances which are God's quarantine regulations, must somehow be overcome."[8]

Bradbury's Earthemen carry out Lewis' prediction, but they are not satisfied with material despoilation. In the poignant chapter "September 2005," one remaining Martian falls victim to the Earthpeople's desires to possess again a relative or loved one whom they have lost through death or desertion. Because Martians are endowed with a telepathic empathy, several Earthpeople think that this lone Martian is their lost loved one returned to them. At the chapter's end the Martian is surrounded by a throng of Earth-

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Near the close of Martian Chronicles, we are shown the end product of man's advanced technology on Earth in terms of two outcomes. One is the total absence of human beings, who have been destroyed in a holocaust of warfare. The other is the final day in the life of a house which, because of the technological marvels of its construction, seems as fully alive as Asimov's Robbie. Etched on the outside wall paint of the house are the silhouettes of a family who were apparently vaporized as they were going about their peaceful pursuits. The house lives vigorously through the day, its taped voices and electronic self-sustaining devices working perfectly. But late in the evening the house perishes in a fire that its technological miracles, without the aid of living man, are helpless to overcome.

This chapter ("August 2026") was particularly singled out for praise by the students. They found in it a high degree of science-fiction inventiveness and writing skill. But after witnessing the destruction of the people and civilization on two planets, they wondered if the human race would ever develop the moral equivalent of its advanced technology. As one student put it, "People from Earth were expecting unlimited scientific growth, and they craved for power but their minds were not far enough advanced to handle these . . . changes."[9] Another student speculated about the future of the family of Earthpeople who are the sole inhabitants of Mars at the end of Bradbury's book. This family is determined to start anew and avoid mankind's mistakes. But can they escape from the legacy of their race? This student concluded his paper optimistically: "Now that Earth was destroyed and they

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I have chosen to show my students' reactions to certain books, not because these were favorites of the whole class, but because they stimulated the consideration of issues that are particularly important to students of science and technology. Toward the end of the course, we studied Walter M. Miller's A Canticle for Leibowitz, a novel which makes a penetrating study of the themes that we had encountered in Wells, Asimov, Lewis, and Bradbury. Shortly before assigning Miller's novel, I had guided the class through a survey of mankind's myths as presented in a film-strip series. We had discussed the course readings in retrospect, discovering the uses of myth in various stories. My final exam question on A Canticle for Leibowitz was "Write an essay in which you show how myth and religion are used to develop the themes throughout the book."

The first part of Canticle is entitled "Fiat Homo," and it shows mankind in 2500 A.D. still in a state of barbarism and ignorance which resulted from the massive atomic warfare of the 1960's. The world of 2500 A.D. is going through a phase of development that roughly parallels the Dark Ages after the fall of Rome. A monastery located in a desert in "Texarkana" is a repository of some fragmentary records of past culture; but the abbot and the monks are as ignorant of the significance of these records as they are of their own Catholic heritage.

Some of my students noticed the significance of "Fiat Homo" preceding "Fiat Lux," which is title of Part Two: that is, we are shown man before he is enlightened by knowledge. The students noted the comic naming of the monastery

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A further irony develops in Part Two, in which one of the scholarly monks "invents" the dynamo and the light bulb. It is now 3100 A.D., and the monks represent a state of mankind comparable to that of medieval Europe. Accordingly, they resist these inventions as devilish, not knowing that electrical science was their sainted Liebowitz' field of knowledge. A debate develops on the question of whether the Church should harbor knowledge and withhold it from man until he is morally ready to use it constructively.

However, the light of knowledge has dawned, and mankind retraces the development it achieved in the two thousand years after Christ. Part Three is set in 3700 A.D., by which time civilization has become fully modernized in technological products, including atomic weapons. The students noted that Miller used the myth of the cyclical year to bring mankind through its innocent spring and hectic summer. Now the winter of the race approaches, for atomic warfare is once again in the offing. Mankind repeats its misuse of knowledge, and the world of 3700 A.D. perishes in the same nuclear flames that caused the people in the first part of the novel to refer to the 1960 holocaust as the Flame Delgue.

Part Three is entitled "Fiat Voluntas Tua"—Let Thy Will be Done. One student wrote that this fiat could be interpreted as God's command that mankind be destroyed for its perverse use of knowledge. But another pointed out that the myth of the phoenix is operant in all three parts of A Canticle for Leibowitz. He noted that the world of 2500 A.D. rose from the twentieth-

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century Flame Deluge. He also noted that at the end of the book a starship carrying some monks, some children, and some microfilms stocked with knowledge leaves the earth to journey to another planet for a fresh start at life. "Like the Phoenix rising from its ashes," wrote this student, "the spaceship with the monks of the Order of Leibowitz is rising from the flames of a world that is destroying itself for a second time."[11] The world will enjoy yet another spring.

Thus, the old but immortal Jewish man who appears throughout the book in search of the Messiah--this "wandering Jew" may symbolize hope for mankind. One student showed that Isaac Leibowitz is linked with the wanderer by his Jewish name and by his itinerant career after the Flame Deluge of the 1960's. "Leibowitz," then, may represent man's saving intelligence, that faculty of soul which stands apart from man's folly and perseveres despite the folly. Walter M. Miller has written a canticle or hymn in praise of that wise faculty of man, a hymn exhorting man to follow his best intelligence and burn the rest. So the title of Part Three("Fiat Voluntas Tua") asks that man's highest and wisest will be done. To do this is to find the Messiah.

Our reading and discussion of Miller's novel formed the climax of my science fiction course, because this novel explores intensely the question that is so important to students and indeed to us all. The question is: How shall man employ science and technology to bless rather than curse his sojourn on earth? This is really the central question propounded by Wells, Asimov and the rest. I believe that my students discovered that the best writers of science fiction can raise and explore this kind of question in an unique and powerful way. Like all good literature, science fiction of the best caliber helps us in our human endeavor to understand our nature and to affect our experience.

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FOOTNOTES

1. In Benjamin Disraeli, Sybil, a novel published in 1845.

2. H. G. Wells, The Time Machine and The War of the Worlds, introduction by Isaac Asimov, (Greenwich, Conn., 1968), p. 15.

3. Isaac Asimov, I, Robot, (Greenwich, Conn. 1970), pp. 12, 13

4. C.S. Lewis, Perelandra (New York, 1944), pp. 73-74.

5. Sandy Bohjanen, "Perelandra," a class report, February 10, 1976.

6. Lewis, p. 73.

7. William Lynch, "The Martian Chronicles," a class essay, February 20, 1976.

8. Lewis, p. 81.

9. Patrick Murphy, "The Martian Chronicles," a class essay, February 20. 1976.

10. Bob Lang, "The Point of View in The Martian Chronicles," a class essay, February 20, 1976.

11. Carl Edquist, class final examination, March 4, 1976.

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century Flame Deluge. He also noted that at the end of the book a starship carrying some monks, some children, and some microfilms stocked with knowledge leaves the earth to journey to another planet for a fresh start at life. "Like the Phoenix rising from its ashes," wrote this student, "the space-ship with the monks of the Order of Leibowitz is rising from the flames of a world that is destroying itself for a second time."[11]

Thus, the old but immortal Jewish man who appears throughout the book in search of the Messiah--this "wandering Jew" may symbolize hope for mankind. One student showed that Isaac Leibowitz is linked with the wanderer by his Jewish name and by his itinerant career after the Flame Deluge of the 1960's. "Leibowitz," then, may represent man's saving intelligence, that faculty of soul that stands apart from man's folly and perseveres despite the folly. Walter M. Miller has written a canticle or hymn in praise of that wise faculty of man, a hymn exhorting man to follow his best intelligence and burn the rest. So the title of Part Three asks that man's highest and wisest will be done. To do this is to find the Messiah.

In A Canticle for Leibowitz my students encountered literature that is excellent science fiction and yet goes beyond the usual boundries of that genre. The San Francisco Chronicle reviewer wrote that Canticle is "a remarkable science-fiction novel that soars above the level of science fiction in the realm of satire, parable, allegory, and philosophy."[12] When I consider my teaching goals for the science fiction course, I am glad that I included this novel as the final assignment.

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FOOTNOTES

1. In Benjamin Disraeli, Sybil, a novel published in 1845.

2. H. G. Wells, The Time Machine and The War of the Worlds, Introduction by Isaac Asimov, (Greenwich, Conn., 1968), p. 15.

3. Isaac Asimov, I, Robot, (Greenwich, Conn., 1970), pp. 12, 13.

4. C. S. Lewis, Perelandra (New York, 1944), pp. 73-74.

5. Sandy Bohjanen. "Perelandra," a class report, February 10, 1976.

6. Perelandra, p. 73.

7. William Lynch, "The Martian Chronicles," a class essay, February 20, 1976.

8. C. S. Lewis, "On Stories," quoted in Franz Rottensteiner, The Science Fiction Book (New York, 1975), p. 65.

9. Patrick Murphy, "The Martian Chronicles," a class essay, February 20, 1976.

10. Bob Lang, "The Point of View in The Martian Chronicles," a class essay, February 20, 1976.

11. Carl Edquist, Final Exam, March 4, 1976.

12. Orville Prescott, San Francisco Chronicle, March 8, 1960.